Honors Physics Optics HW, Ch. 23 (Homework)

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Include file name: Physics_Worksheet_0062
Price: $3

1.
A spherical Christmas tree ornament is 10.00 cm in diameter. What is the magnification of an object placed 9.0 cm away from the ornament?

2.
A dentist uses a mirror to examine a tooth. The tooth is 1.25 cm in front of the mirror, and the image is formed 13.0 cm behind the mirror. Determine
(a) the mirror's radius of curvature and
(b) the magnification of the image.

3.
A convex mirror has a focal length of 19.0 cm. Determine the object location for which the image will be one-fourth as tall as the object.

4.
A 1.75 cm high object is placed 3.0 cm in front of a concave mirror. If the image is 4.5 cm high and virtual, what is the focal length of the mirror?

5.
A convex spherical mirror with a radius of curvature of 17.0 cm produces a virtual image one third the size of the real object. Where is the object?

6.
It is observed that the size of a *real* image formed by a concave mirror is four times the size of object when the object is 27.5 cm in front of the mirror. What is the radius of curvature of this mirror?
7.
A converging lens has a focal length of 20.0 cm. Locate the images for object distances of (For each case, state whether the image is real or virtual and upright or inverted, and find the magnification.) (Hint: If you feel a word is needed, instead of a numeric answer, then fill in the blank.)
(a) 40.0 cm,
image distance =
magnification =
(b) 20.0 cm
image distance =
magnification =
(c) 10.0 cm
image distance =
magnification =

8.
A diverging lens has a focal length of 20.0 cm. Locate the images for each of the following object distances. For each case, state whether the image is real or virtual and upright or inverted, and find the magnification.
(a) 40.0 cm
q = M =
(b) 20.0 cm
q =
M = ×
(c) 10.0 cm
q =
M = ×

9.
The nickel's image in Figure P23.35 has four times the diameter of the nickel when the lens is 2.65 cm from the nickel. Determine the focal length of the lens.


Figure P23.35

10.
We want to form an image 33.0 cm from a diverging lens with a focal length of -46 cm. Where must we place the object?
Determine the magnification.